

Carbon dioxide detector

Manual



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I. Instruction before use

Thank you very much for your purchasing of the wall-mounted multiple-function carbon dioxide, temperature and humidity detector manufactured by our company. In order that you can operate the device correctly, quickly and conveniently, you must read safety information and considerations mentioned in other clauses in this instruction book first. This will help you to use the product better.

II. Product overview:

The product is a type of multiple-function detector used to detect concentration of carbon dioxide, temperature and humidity and is widely applied in detection of environmental quality such as Industrial production, hotels and department stores, offices and meeting rooms, libraries, warehouses, stations and airports, biological pharmacy, family living rooms, laboratories of schools, reading rooms, hospitals, agricultural production greenhouses and other sites.

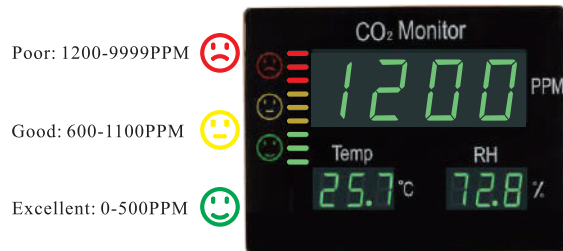
Characteristic of products:

- Unique design of shell materials, as bright as new after long-term use; beautiful overall appearance, humane key design, simple operation.
- High precision, high resolution and quick response;
- Adoption of matching power adapter converting AC 220V to DC 9V to provide power enables continuous work for a long time.
- Multiple groups super large three-color LED digital tubes for display. Clear and intuitive. The air quality level is distinct.
- The alarm value for upper and lower limit of carbon dioxide concentration can be set at will. With the function of two-level sound-light alarm, the concentration for alarm may be preset. It can respond in time and give out alarm prompt.
- Original carbon dioxide sensor imported from Europe is adopted as the sensor. The sensor features linear output with quick response speed.
- The concentration of carbon dioxide, temperature and humidity can be displayed at the same time to detect air quality in time.

III. Technical parameters:

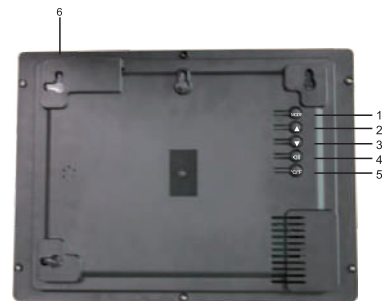
Measurement range	Co ₂ concentration	0-9999PPM
	Temperature	-10℃~100℃
	Humidity	0-99.9%RH
Measurement precision	Co ₂ concentration	±70PPM±3%reading
	Temperature	±1℃
	Humidity	±3%
Resolution	Co ₂ concentration	1PPM
	Temperature	0.1℃
	Humidity	0.1%RH
Repeat ability	≤±0.5%	
Response time	10seconds	
Working condition	0℃~50℃, 0%~90%non-condensing	
Storage condition:	-30℃~70℃, 0%~90%non-condensing	
Work power	AC 220V converted to DC 9V 2A power adapter	
Maximum power consumption	9V*350mA	
External size	388*288*43mm	
weight	2420g	

IV. Panel and description for keys:



Key function

1. MODE: set carbon dioxide concentration alarm value
2. ▲: Increase the alarm value
3. ▼: Decrease the alarm value
4. 🔊: On or off
5. ℃/°F: ℃/°F unit conversion
6. DC power interface



Instruction for use:

Open packing case of the product to take out DC 9V power adaptor with standard configuration. Insert DC contact to power interface of the device. After the power is connected, the device will enter detection state after countdown of 7s.

Upper limit alarm setting:

Press “mode” key to enter the mode (the initial value at delivery is 1200PPM). Then press “▲” and “▼” keys to adjust upper limit alarm value. After that, press “MODE” key to exit to complete the setting of upper limit alarm value.

V. Considerations:

- The electronic sensors and microprocessors used on the product belong to precision electronic elements. The product must be kept away from water, fire, inflammable oil and gas or sites with strong electromagnetic interference to prevent influence on/damage to the device.
- At the time of installation, ensure that the air can flow naturally to prevent blocking or blowing of strong air or hot air to the vent hole used for sampling the air.
- The device should avoid strong impact and vibration.
- Strong decontaminant or other detergents should not be used for cleaning the device. It is suitable to wipe the casing with clear water and wet cloth. Avoid corrosive liquid or gas hurting the device.
- In order for normal work for a long time, the power adaptor with standard configuration of original factory must be used to ensure that fluctuation of the power supply is within the scope of technical index of the device.

VI Description of appendix information

1. Physical and chemical property of CO₂: Carbon dioxide: molecular formula CO₂, molecular weight 44.01, condensation point -56.6 C, boiling point -78.5 C, sublimation temperature -78.48 C, specific gravity 1.527g/cm³. It is colorless, odorless and gas with slight sour at standard conditions.
2. Source of CO₂: carbon dioxide is one of the main pollutants in indoor air. The source of indoor carbon dioxide includes indoor and outdoor sources. Outdoor sources include combustion of coal and timber, etc. Indoor sources mainly include two aspects. One aspect is

the gas from exhalation of mankind. Another aspect is from combustion of fuels (indoor heating coal stove and gas stove, etc).

3. The relation between CO₂ and human body: CO₂ is the changeable component in air. The concentration of CO₂ in normal air is about 300-500 ppm. CO₂ is needed for normal physiology of human body and belongs to stimulant of respiratory center. The concentration of CO₂ in human exhalation is about 4000ppm. Therefore, it is not poisonous substance generally. In places with crowded people, fuel combustion and indoor locations with poor ventilation, CO₂ concentration is usually higher than that of outdoor places. It will not produce toxic action for human body unless the concentration exceeds certain scope.

Table 1: Toxicity of CO₂

CO ₂ concentration				Poisoning condition
mg / m ³		ppm		
10000		5550		No poisoning symptom after 6 hours.
20000	30000	11000	16700	May be living within several hours
60000	80000	35500	44500	Still living within 0.5-1 hour
90000	120000	50000	67000	Die within 0.5-1 hour or acute death

Latest carbon dioxide concentration and human physiological reaction

350 ~ 450ppm: the same as common outdoor environment
 350 ~ 1200ppm: fresh air, smooth breadth
 1200--2500ppm: feel that the air is turbid and begin to feel sleepy.
 2500 ~ 5000ppm: feel headache, drowsiness, sluggishness, aprosexia, tachycardia and mild nausea
 Larger than 5000ppm: may result in serious anoxia, cause permanent cerebral injury, coma or even death.

Table 2: existing domestic CO₂ indoor air quality standard

Issuing department:Name of standard	Standard code	Standard value (ppm)
Hygienic Standard for Carbon Dioxide of Indoor Air	GB/T1170941997	≤1000
Hygienic Standard for Hotels	GB 9663-1996	700
		1000
		1000
Hygienic Standard for Public Place of Entertainment	GB 9664-1996	≤1500
Hygienic Standard for Public Bathrooms	GB 9665-1996	Changing room≤1500 Bathroom≤1000
Hygienic Standard for Barber Shop and Beauty Shop	GB 9666-1996	≤1000
Hygienic Standard for Swimming Place	GB 9667-1996	≤1500
Hygienic Standard for Gymnasium	GB 9668-1996	≤1500
Library, museum and Gallery	GB 9669-1996	Library/museum /Gallery≤1000
Hygienic Standard for Exhibition Hall		Exhibition Hall≤1500
Hygienic Standard for Shopping Centre and Book Store	GB 9670-1996	≤1500
Hygienic Standard for Hospital Waiting Room	GB 9671-1996	≤1000
Hygienic Standard for Waiting Room of Public Transit Means	GB 9672-1996	≤1500
Hygienic Standard for Public Means of Transportation	GB 9673-1996	≤1500
Hygienic Standard for Restaurant (dining room)	GB 16153-1996	≤1500

4. The relation between CO_2 and plants: CO_2 is raw material for photosynthesis of plants and photosynthesis affects growth speed of plants directly. From the aspect of professional research, CO_2 also affects respiratory rate of plants and utilization efficiency of water at the same time and changes metabolism of plants to further affect nutrition of plants. In short, proper CO_2 concentration can improve quantity and quality of plants to a great extent.

Onsite photographing of the scene as shown in figure:

